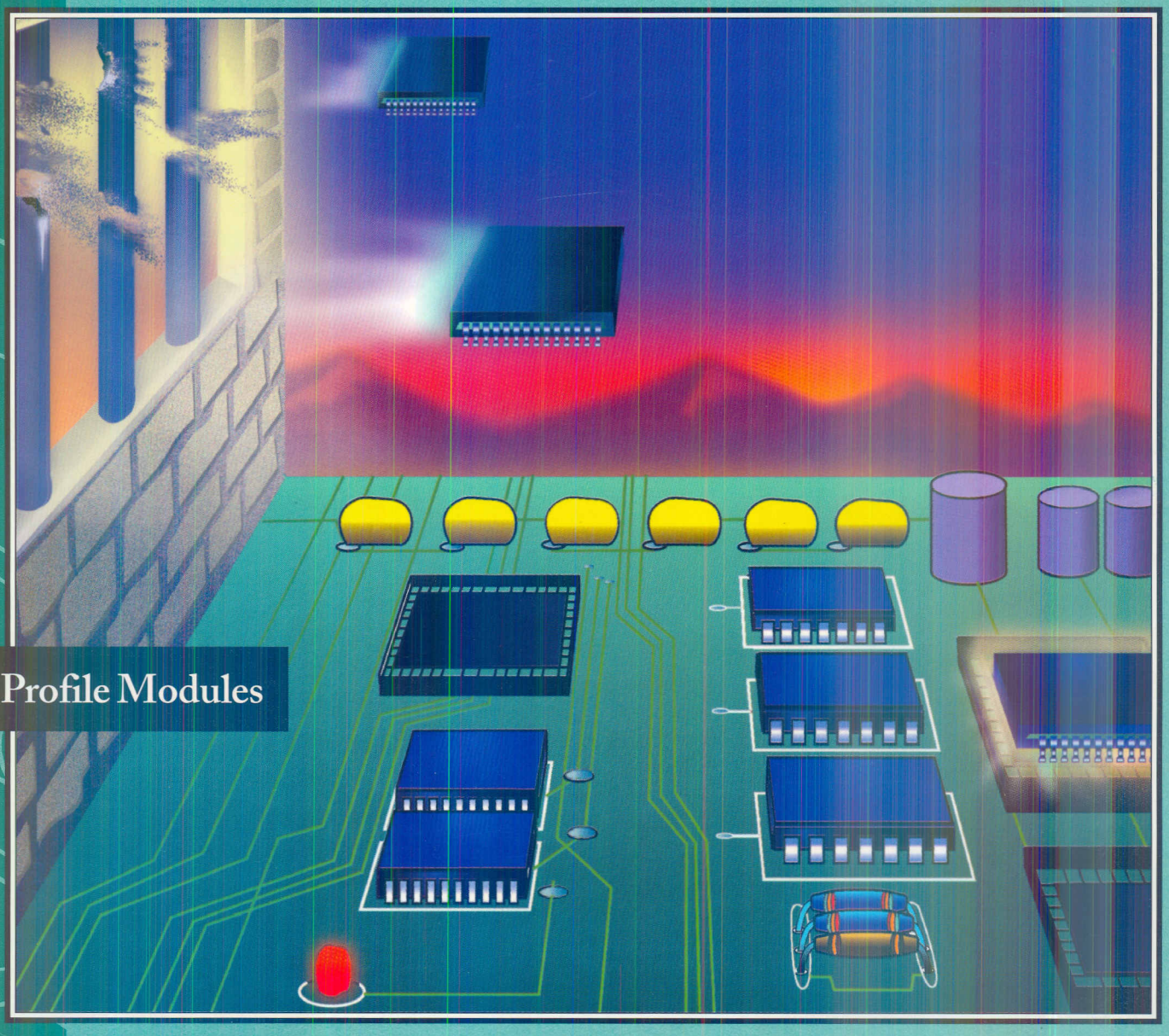


Low Profile Modules

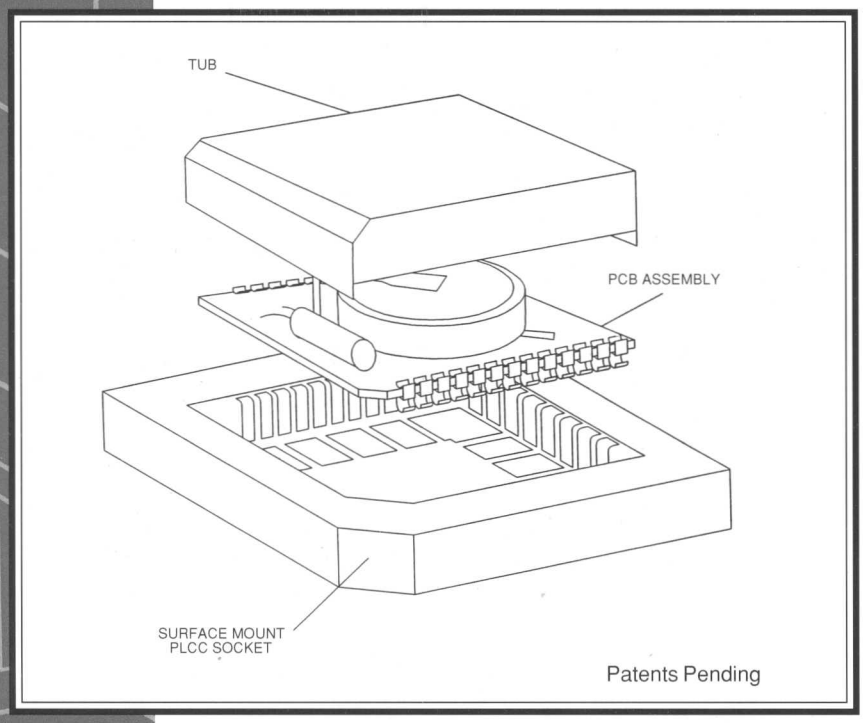
Over the past 11 years, Dallas Semiconductor has developed an extensive family of Nonvolatile SRAM modules. Because the lithium batteries inside these modules cannot survive the high temperatures of surface-mount soldering, Nonvolatile SRAMs have always been packaged as DIP-style products.

Until now. *Introducing Low Profile Modules, the first surface-mount Nonvolatile SRAMs.*

DALLAS SEMICONDUCTOR

A Great Surface Mount Package

Low Profile Modules contain the same components as traditional DIP-style modules and perform the same functions. Available in 26-pin and 34-pin configurations, LPMs are designed to snap into standard, off-the-shelf 52- or 68-pin PLCC sockets, making electrical contact on only two of the sockets' four sides. During manufacturing, the PLCC sockets are reflow soldered normally while the Low Profile Modules stay cool and safe elsewhere. Later in the manufacturing flow, LPMs are snapped into the sockets, ready to use.



With a maximum height of only 0.25 inches, LPMs are *truly* low profile—the lowest in the industry. In their sockets, 26-pin LPMs occupy 1.0 square inches of board space and 34-pin LPMs occupy 1.47 square inches (see Mechanical Dimensions on page 4). The LPM/socket combination can withstand 500g mechanical shocks, as tested according to MIL-STD-883, Method 2002, Cond. A. The combination also passes MIL-STD-883 Method 2005, Condition II and Method 2007, Condition A vibration testing procedures.

Standard 52-pin and 68-pin surface-mount PLCC sockets are available from many vendors. Several of these—including Harwin, McKenzie, and Robinson-Nugent—build low-cost PLCC sockets with contacts on only two sides, specifically for use with Low Profile Modules.

The Ideal Nonvolatile Technology

	26-Pin Package	34-Pin Package		
Product Type	**8K x 8**	**32K x 8**	**128K x 8**	**512K x 8**
NV SRAM		DS1230	DS1245	DS1250
NV SRAM with Battery Warning		DS1330*	DS1345*	DS1350*
NV SRAM with Partitioning		DS1630	DS1645	DS1650
NV SRAM with Partitioning, 3V		DS1730	DS1745	DS1750
NV SRAM with Clock/Calender	DS1643	DS1644	DS1646	DS1647*

*=Coming Soon

Meet the Family

Currently, Dallas Semiconductor offers five distinct series of NV SRAM products in the Low Profile Module package (see chart opposite below). From our original DS12xx module family, we currently offer the DS1230, DS1245, and DS1250. Our upcoming DS13xx modules will build upon the original NV SRAM foundation by adding specialized battery monitoring functionality. These modules will serve high-temperature applications where battery life can be dramatically shortened, long-life systems where 10-year data retention is not enough, and critical applications where battery failure cannot be tolerated.

Our DS16xx and DS17xx module families offer 5-volt and 3-volt products in densities from 32K x 8 to 512K x 8. Sections of their memory arrays can be locked into a read-only mode, protecting important code and data in specified memory sections from accidental overwrite, while data in other sections can be freely read and written. Memory sections can be locked and unlocked as often as needed.

Dallas Semiconductor's world-renowned Timekeeping product line also offers a series of products in Low Profile Module packages. Called Timekeeping RAMs, these nonvolatile memories feature built-in clock/calendar functionality with one second per month accuracy.

The Ideal Nonvolatile Technology

Technologically, Nonvolatile (NV) SRAM has excellent characteristics compared to any other nonvolatile memory type. Unlike EPROM, EEPROM and Flash technologies, NV SRAM requires no special erasure mechanism and no long write times. Because NV SRAM is, fundamentally, battery-backed RAM, write cycles can be as fast as 70 ns, just like reads. Furthermore, while the other nonvolatile technologies struggle to reach a write-cycle endurance rating of one million cycles before wear-out, NV SRAM has no such wear-out mechanism and no write-cycle endurance limitations of any kind.

NV SRAM modules are offered in convenient bytewide pinouts and feature the same pin functions as bytewide SRAM components. NV SRAMs as large as 4Mb are available, and all NV SRAM modules are rated for 10 years of data retention.

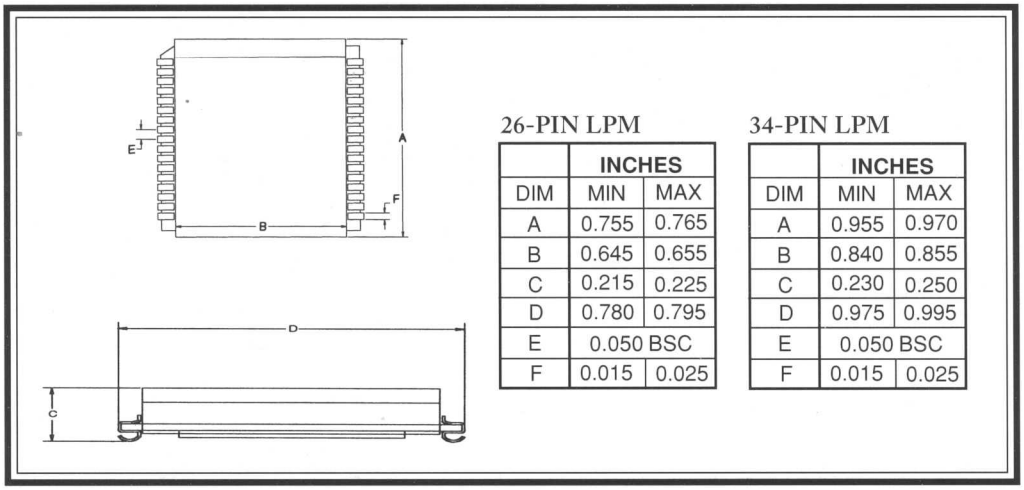
Dallas Semiconductor NV SRAMs are used in personal computers, medical equipment, test and measurement equipment, industrial controls, data logging applications, printers, fax machines, video games, lottery machines, telecommunications equipment, and many other product categories.

Anatomy of a Battery-Backed SRAM

The diagram on the previous page illustrates the composition of Low Profile Module NV SRAM devices. A low-power SRAM, a nonvolatile controller chip and a battery are mounted on a small PC board to which leads are attached. This subassembly is then sealed inside a plastic tub and branded.

The nonvolatile controller is the enabling entity in an NV SRAM memory. This small chip contains all of the logic to sense when system power begins to decay, write-protect the RAM, and switch from system power to battery power. In addition, the nonvolatile controller also takes responsibility for functions such as battery monitoring, partitioning, and timekeeping.

Mechanical Dimensions



26-PIN LPM

	INCHES	
DIM	MIN	MAX
A	0.755	0.765
B	0.645	0.655
C	0.215	0.225
D	0.780	0.795
E	0.050 BSC	
F	0.015	0.025

34-PIN LPM

	INCHES	
DIM	MIN	MAX
A	0.955	0.970
B	0.840	0.855
C	0.230	0.250
D	0.975	0.995
E	0.050 BSC	
F	0.015	0.025

I'm Interested. Who Do I Call?

For technical product information, call (214) 450-0448 or FAX us at (214) 450-3715. If calling from overseas, dial (214) 450-5351. We can mail a data book and product literature immediately, or we can have you talk to an applications engineer.

You can order any Dallas Semiconductor product for next-day shipment with a Visa, MasterCard, or American Express. Call our Credit Card Sales service at 1-800-336-6933.

You can also contact our nearest distributor, representative, or sales office.

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